



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/072,833 | 02/06/2002 | Andrew L. Norrell | PA1599US | 3740 |

7590 05/01/2006

Jim H. Salter
Blakely, Sokoloff, Taylor, and Zafman LLP
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER

SINGH, RAMNANDAN P

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2614

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/072,833 | NORRELL ET AL. | |
| | Examiner | Art Unit | |
| | Ramnandan Singh | 2614 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31-43 is/are allowed.
- 6) ☒ Claim(s) 1-10, 18-26, 44 and 45 is/are rejected.
- 7) ☒ Claim(s) 11-17 and 27-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. In view of the finding of new prior art, the final rejection dated Jan. 19, 2006 is withdrawn, prosecution is reopened, as new grounds of rejections are made.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 6-13, 18, 23-27, 29, 31-32, 34, 37, 40-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitation " a first upstream filter/amplifier element coupled to the plurality of upstream complex impedances via a first switch" in lines 6-7. It is unclear whether the term "/" used above indicates "**and**" or "**alternative**". A similar thing holds for claims 6-13, 18, 23-27, 29, 31-32, 34, 37 and 40-44. For this Office action, Examiner assumes "/" to be "alternative".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

Art Unit: 2614

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 18-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Mukherjee [US 6,226,322 B1].

Regarding claim 18, Mukherjee teaches a method for improving transmission of DSL signals over a local loop shown in Figs. 1-4 [col. 10, lines 41-63], comprising the steps of:

configuring a loop extender [col. 2, lines 10-28] with:

a plurality of upstream complex impedances comprising elements, capacitor C89, resistors RIX, RI1, RI2 and RI3 wherein selecting a combination of switches S12', S23' and S3X' yields a plurality of complex impedances coupled in parallel [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37; col. 17, line 18 to col. 18, line 12];

a plurality of downstream complex impedances comprising resistor Ri1, a variable resistor Rs1 and capacitor Cs1 wherein selecting different values of Rf1 yields a plurality of complex impedances coupled in parallel [Figs. 1, 10, 13; col. 26, line 59 to col. 28, line 15];

a plurality of upstream amplifying elements comprising amplifier 90, resistors R1, R2, R3, RX wherein selecting a combination of switches S12, S23, S3X yields a plurality of amplifying elements coupled in parallel and coupled in series with the plurality of upstream complex impedances [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37]; and

a plurality of downstream amplifying elements comprising amplifier (111), capacitor Cf1 and a variable resistor Rf1 wherein selecting different values of the variable resistor Rf1 yields a plurality of amplifying elements coupled in parallel and coupled in series with the plurality of downstream complex impedances [Figs. 10, 13; col. 26, line 59 to col. 28, line 15].

Regarding claims 19-25, the limitations are shown above.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
7. Claims 1-9 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee [US 6,226,322 B1].

Regarding claim 1, Mukherjee further teaches a system for improving transmission of DSL signals over a local loop, the system comprising:

a loop extender capacitively coupled to the local loop using capacitor C89 [Fig. 8];

a plurality of upstream complex impedances comprising elements, capacitor C89, resistors RIX, RI1, RI2 and RI3 wherein selecting a combination of switches S12', S23' and S3X' yields a plurality of complex impedances coupled in parallel [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37];

a plurality of downstream complex impedances comprising resistor R_{i1} , a variable resistor R_{s1} and capacitor C_{s1} wherein selecting different values of R_{f1} yields a plurality of complex impedances coupled in parallel [Figs. 1, 10, 13; col. 26, line 59 to col. 28, line 15];

a plurality of upstream amplifying elements comprising amplifier 90, resistors R_1 , R_2 , R_3 , R_X wherein selecting a combination of switches S_{12} , S_{23} , S_{3X} yields a plurality of amplifying elements coupled in parallel and coupled in series with the plurality of upstream complex impedances [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37]; and

a plurality of downstream amplifying elements comprising amplifier (111), capacitor C_{f1} and a variable resistor R_{f1} wherein selecting different values of the variable resistor R_{f1} yields a plurality of amplifying elements coupled in parallel and coupled in series with the plurality of downstream complex impedances [Figs. 10, 13; col. 26, line 59 to col. 28, line 15].

Although Mukherjee teaches coupling a first upstream amplifying element (54C) in series with the plurality of upstream complex impedances (56) [Figs. 1, 4, 8], he does not teach expressly using a first switch to connect the first upstream amplifying element to the plurality of upstream complex impedances.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a switch, called a first switch, in order to selectively connect the

Art Unit: 2614

first upstream amplifying element to the plurality of upstream complex impedances to facilitate the selection of impedances. Similarly, a second switch is applied to select one of the downstream impedances .

Regarding claims 2-6, the limitations are shown above.

Regarding claim 7-9, although Mukherjee does not teach expressly using fourth and fifth switches, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to use a switch, called a third switch, in order to select one of the upstream amplifying elements to facilitate the selection of amplifying elements to provide upstream DSL signal amplification. Similarly, a fourth switch is applied to select one of the downstream amplifying elements.

Regarding claim 44, Mukherjee teaches a method for improving transmission of DSL signals over a local loop, comprising the steps of:

transmitting control signals and DSL signals over the local loop [Fig. 1; col. 3, line 61 to col. 4, line 12; col. 5, line 12 to col. 6, line 9; col. 8, lines 18-65];

providing DSL signal amplification via selectable line termination and equalization (SLTE) DSL amplification circuitry coupled to the local loop [Figs. 2-7; col. 23, line 18 to col. 24, line 35; Fig. 12; col. 26, lines 33-58];

receiving the control signals via a control unit (digital transceiver 13) coupled to the local loop and processing the control signals [Figs. 1-3; col. 9, lines 26-67];

selecting SLTE DSL amplification circuitry switch states in accordance with the processed control signals; selecting SLTE DSL amplification circuitry switch states in accordance with the processed sampled DSL signals to improve SLTE DSL amplification circuitry performance; uncoupling SLTE DSL amplification circuitry [Fig. 5] from the local loop in accordance with the processed control signals [Figs. 5-6; col. 11, line 19 to col. 12, line 45; col. 23, lines 18-39].

Mukherjee does not teach expressly sampling digital signals within DSL amplification circuitry.

Since Mukherjee teaches the system where sampling is required [Figs. 4, 5, 10, 16; col. 12, lines 23-67; col. 29, lines 13-59], it would have been obvious to a person of ordinary skill in the art to do sampling of DSL signals within the SLTE DSL amplification circuitry and processing the sampled DSL signals in order to reduce the memory requirement for processing.

Claim 45 is essentially similar to claim 44 and is rejected for the reasons stated above.

8. Claims 10, 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee as applied to claim 25 above.

Regarding claim 10, although Mukherjee teaches the system, wherein the selection of one of the plurality of amplifying elements is based upon the particular characteristics of a subscriber loop [col. 19, lines 27-34], it would have been obvious to a person of ordinary skill in the art to use the loop length as one of the characteristics of the loop to select one of the amplifying elements to improve the implementation of impedance matching [Mukherjee: col. 19, lines 35-37].

Claim 26 is essentially similar to claim 10 and is rejected for the reasons stated above.

Allowable Subject Matter

9. Claims 31-43 are allowable.
10. Claims 11-17, 27-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2614

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh
Examiner
Art Unit 2614



FAN TSANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600